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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,182	05/24/2006	Simon Doclo	22409-00388-US	8012
30678 7590 01/31/2008 CONNOLLY BOVE LODGE & HUTZ LLP 1875 EYE STREET, N.W. SUITE 1100 WASHINGTON, DC 20036			EXAMINER PAUL, DISLER	
			ART UNIT 2615	PAPER NUMBER
			MAIL DATE 01/31/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/564,182

Applicant(s)

DOCLO ET AL.

Examiner

Disler Paul

Art Unit

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-11 and 13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11 and 13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/10/06.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 5-7, 9, 11 rejected under 35 U.S.C. 102(e) as being anticipated by Yang et al. (US 7,206,418 B2).

Re claim 1, Yang et al. disclose of the method to reduce noise in a noisy speech signal, comprising: the steps of applying at least two versions of said noisy speech signal to a first filter, said first filter outputting a speech reference signal, said speech reference signal comprising a desired signal and a noise contribution (fig.2,3A; col.2 line 35-40, col.5 line 8-20) and at least one noise reference signal, each of said at least one noise reference signals comprising a speech leakage contribution and a noise contribution (fig.2,3B; col.5 line 25-37), applying a filtering operation to each of said at least one noise reference signals, and subtracting from said speech reference signal each of said filtered noise reference signals, yielding an enhanced speech signal (fig.4 wt (450,434); col.9 line 44-49; col.10 line 5-19), characterized in that whereby said filtering operation is performed with filters having filter coefficients determined by taking into account speech leakage contributions in said at least one noise reference signal

minimizing a weighted sum of the speech distortion energy and the residual noise energy, said speech distortion energy being the energy of said speech leakage contributions in said enhanced speech signal and said residual noise energy being the energy in the noise contributions of said speech reference signal in said enhanced speech signal and of said at least one noise reference signal in said enhanced speech signal (fig.4 wt (450); col.10 line 10-19).

Re claim 2, the method to reduce noise according to claim 1, as in claim 1, wherein said at least two versions of said noisy speech signal are signals from at east two microphones picking up said noisy speech signal (fig.3B, col.5 line 22-27/plurality of microphones).

Re claim 5, the method to reduce noise according to claim 1, wherein said speech reference signal is delayed before performing the subtraction step (fig.3A wt (312); col.6 line 30-32).

Re claim 6, the method to reduce noise according to claim 1, wherein additionally a filtering operation is applied to said speech reference signal and wherein said filtered speech reference signal is also subtracted from said speech reference signal (fig.4 wt (432,434)).

Re claim 7, the method to reduce noise according to claim 1, further comprising the step of regularly adapting said filter coefficients, thereby taking into account said speech leakage contributions in each of said at least one noise reference signal signals or taking into account said speech leakage contributions in each of said at least one noise reference signals and said

desired speech contribution in said speech reference signal (fig.4 wt (450); col.10 line 11-18; col.9 line 44-47).

Re claim 9, the signal processing circuit for reducing noise in a noisy speech signal, comprising a first filter, said first filter having at least two inputs and being arranged for outputting a speech reference signal and at least one noise reference signal (fig.2 wt (214)), a filter to apply said speech reference signal to and filters to apply each of said at least one noise reference signals to (fig.2, fig.3A,3B) , and summation means for subtracting from said speech reference signal said filtered speech reference signal and each of said filtered noise reference signals(fig.4 wt (434)).

Re claim 11, the signal generating-processing circuit according to claim 9, wherein said beamformer filter is a delay-and-sum beamformer (fig.3A).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US 7,206,418 B2) and further in view of Marsh (US 6,178,248 B1).

Re claim 13, the signal processing circuit according to claim 9, with the signal processing circuit, However, Yang et al. fail to disclose of the signal processing circuit is implanted in a prosthetic hearing device. However, Marash disclose of an adaptive & beamforming system wherein the signal processing circuit is implanted in a prosthetic hearing device (col.1 line 11-16; col.2 line 20-29) for the purpose of providing improved intelligibility to the hearer and compensating for background noise. Thus, taking the combined teaching of Yang et al. and Marash as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify Yang et al. by incorporating the adaptive & beamforming system wherein the signal processing circuit is implanted in a prosthetic hearing device for the purpose of providing improved intelligibility to the hearer and compensating for background noise.

5. Claim 3-4,10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US 7,206,418 B2) and further in view of Hoshuyama (US 6,449,586 B1).

Re claim 3, the method to reduce noise according to claim 1, wherein said first filter is a spatial pre-processor filter, comprising a beamformer filter and a blocking filter (fig.2 wt (214a, 214b)), However, Yang et al. fail to disclose of the specific wherein the blocking filter being the specific of the blocking matrix filter. However, Hoshuyama disclose of a beamforming adaptive enhancing signal wherein the blocking filter being the specific of the blocking matrix filter (fig.24-27,35; col.5 line 62-65) for the purpose of processing group of signals. thus, taking the

combined teaching of Yang et al. and Hoshuyama as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify Yang et al. by incorporating the beamforming adaptive enhancing signal wherein the blocking filter being the specific of the blocking matrix filter for the purpose of processing group of signals.

Re claim 4, the method to reduce noise according to claim 3, wherein said speech reference signal is output by said beamformer filter and said at least one noise reference signal is output by said blocking matrix filter (col.5 line 8-39).

Re claim 10, the signal processing circuit according to claim 9, wherein said first filter is a spatial pre-processor filter, comprising a beamformer filter and a blocking filter (fig.2 wt (214a,214b)) , However, Yang et al. fail to disclose of the specific wherein the blocking filter being the specific of the blocking matrix filter. However, Hoshuyama disclose of a beamforming adaptive enhancing signal wherein the blocking filter being the specific of the blocking matrix filter (fig.24-27,35; col.5 line 62-65) for the purpose of processing group of signals. thus, taking the combined teaching of Yang et al. and Hoshuyama as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify Yang et al. by incorporating the beamforming adaptive enhancing signal wherein the blocking filter being the specific of the blocking matrix filter for the purpose of processing group of signals.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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